Table 1. Growth of fungal species treated with fungicides or varying concentrations of garlic extract.

Fungal pathogen	Treatment[x]	Plates with visible mycelial growth (%)	Measured growth (cm)[y]
Pythium aphanidermatum			
	Fungicide	0	0
	Non-treated control	100	2.0
	10% garlic	0	0
	15% garlic	0	0
	20% garlic	0	0
	25% garlic	0	0
	30% garlic	0	0
Significance		***	***
Pythium irregular			
	Fungicide	0	0
	No treatment control	100	2.0
	10% garlic	0	0
	15% garlic	0	0
	20% garlic	0	0
	25% garlic	0	0
	30% garlic	0	0
Significance		***	***
Pythium ultimum			
	Fungicide	0	0
	No treatment control	100	2.0
	10% garlic	0	0
	15% garlic	0	0
	20% garlic	0	0
	25% garlic	0	0
	30% garlic	0	0
Significance		***	***
Phytophthora capsici			
	Fungicide	0	0
	Non-treated control	100	0.6
	10% garlic	0	0
	15% garlic	0	0
	20% garlic	0	0
	25% garlic	0	0
	30% garlic	0	0
Significance		***	***

Phytophthora cinnamomi			
	Fungicide	0	0
	Non-treated control	100	0.9
	10% garlic	0	0
	15% garlic	0	0
	20% garlic	0	0
	25% garlic	0	0
	30% garlic	0	0
Significance		***	***
Phytophthora nicotiana			
	Fungicide	0	0
	Non-treated control	100	1.4
	10% garlic	0	0
	15% garlic	0	0
	20% garlic	0	0
	25% garlic	0	0
	30% garlic	0	0
Significance		***	***
Rhizoctonia solani			
	Fungicide	50[x]	0.3
	Non-treated control	100	1.7
	10% garlic	0	0
	15% garlic	0	0
	20% garlic	0	0
	25% garlic	0	0
	30% garlic	0	0
Significance		***	***
***Fusarium oxysporum* f.sp. lycopersici**			
	Fungicide	0	0
	Non-treated control	100	1.1
	10% garlic	0	0
	15% garlic	0	0
	20% garlic	0	0
	25% garlic	0	0
	30% garlic	0	0
Significance		***	***

***Fusarium oxysporum* f.sp. spinaciae**			
	Fungicide	0	0
	Non-treated control	100	1.5
	10% garlic	0	0
	15% garlic	0	0
	20% garlic	0	0
	25% garlic	0	0
	30% garlic	0	0
Significance		***	***

*** Significant at the P>F level of 0.001.
[x] Fungicide controls included Metylaxyl for the *Pythium* and *Phytophthora* species, PCNB for *Rhizoctonia*, Allegiance® for *Fusarium* and Baytan® for *Thielaviopsis*.
[y] Growth (cm) from edge of inoculum plug.
[z] Limited mycelial growth occurred in the first control replication due to inappropriate concentration of PCNB fungicide.

Table 2. Evaluation of fungicides for control of Brown Patch, *Rhizoctonia solani,* and Dollar Spot, *Sclerotinia homoeocarpa,* in creeping bentgrass.

Trials were conducted at Veenker Memorial Golf Course in Ames, Iowa. Creeping bentgrass (cv. Washington) was maintained at 0.16-inch cutting height. Fungicides, selected for activity against brown patch, were applied using a modified bicycle sprayer at 30 psi and a dilution rate of 5 gal per 1,000 sq ft. The experimental design was a randomized complete block with four replications. All plots measured 4 ft x 5 ft. Because several treatments were added to the trial after it began, spray applications were initiated 37 days before first observations ("Start" in table below) for non-Garlic GP treatments) and 23 days prior to observations for Garlic GP treatments. These were followed by re-applications at recommended intervals until the 25th day of application trial. Data were analyzed using the GLM procedure in SAS, and mean separations were determined using Fisher's protected LSD at $P \leq 0.05$.

Disease pressure was moderate to severe for Dollar Spot and Brown Patch. Most of the tested products suppressed both diseases significantly ($P<0.05$) in comparison to the unsprayed check. No phytotoxicity symptoms were observed during the trial.

		Start		Start + 7 Days		Start + 14 Days		Start + 21 Days		Start + 28 Days	
Product and rate per 1,000 sq ft	Interval (days)	Brown Patch[z]	Dollar Spot[y]	Brown Patch	Dollar Spot	Brown Patch[z]	Dollar Spot[y]	Brown Patch	Dollar Spot	Brown Patch	Dollar Spot
Unsprayed check	—	4.2 ab	16.2 ab	3.5 ab	16.2 a	4.5 a	30.7 a	2.0 a	19.2 ab	4.7 a	36.7 b
Emerald 70WG, 0.13 oz	14	3.5 bc	0.7 e	2.2 abcd	0.5 d	0 b	0 e	0.7 ab	0.7 e	1.7 bcde	0 c
Emerald 70WG, 0.18 oz	21	1.2 de	0 e	1.7 bcde	0 d	2.5 cde	0 e	0.2 b	0.1 e	0.2 bcdef	0 c
Insignia 20WG, 0.9 oz	14	0.2 e	3.0 de	0.2 de	5.5 cd	2.2 de	9.5 cde	0.2 b	13.0 bc	1.5 bcdef	26.2 b
Emerald 70WG alt. w/Insignia 20WG, 0.13 oz and 0.9 oz	14	2.2 cd	0 e	1.0 cde	0 d	1.5 e	0 e	0.2 b	0.4 e	0 f	0 c
Propiconazole Pro, 1.0 fl oz	14	1.2 de	0 e	0.5 cde	0 d	2.7 bcde	0.2 e	0.2 b	1.4 e	1.5 bcdef	0.2 c
Endorse, 4 oz	14	0.7 e	16.7 a	0.7 cde	15.5 ab	2.2 de	26.5 ab	0 b	22.0 a	2.5 bc	50.0 a
Spectro, 4 oz	14	0.7 e	0 e	0 e	0 d	2.7 bcde	0 e	1.0 ab	0.2 e	0.7 def	0 c
26GT 2SC, 4 fl oz	14	0.2 e	0 e	0 e	0.5 d	1.2 e	0 e	0 b	0 e	1.2 cdef	0.1 c
Bayleton 50DF, 0.5 oz	14	1.2 de	0 e	1.0 cde	0 d	2.2 de	0 e	0.7 ab	0 e	2.2 bcd	0 c
Garlic GP, 5% (Pat. Pend.)	7	3.7 ab	10.3 abcd	1.7 bcde	9.5 abc	3.7 abcd	21.2 abc	0 b	2.2 e	1.7 bcde	5.5 c
Garlic GP, 5% " "	14	5.0 ab	8.0 bcde	4.0 a	8.2 c	4.0 abc	8.2 de	0.5 b	2.7 e	2.2 bcd	9.5 c
Garlic GP, 10% " "	7	0.2 e	7.2 cde	2.5 abc	7.7 c	4.7 a	7.2 de	1.2 ab	2.5 e	1.7 bcde	2.5 c
Garlic GP, 10% " "	14	4.5 ab	13.5 abc	3.5 ab	11.2 abc	4.2 ab	17.5 bcd	1.0 ab	8.5 c	3.0 b	10.2 c
Garlic GP, 10% " "	21	4.5 ab	15.5 abc	2.0 abcde	8.7 bc	3.2 abcd	14.2 bcd	0.7 ab	2.2 e	1.2 cdef	1.2 c

[z] Disease severity ratings on the following qualitative scale: 0 = no disease; 1 = 1-5%; 2 = 6-10%; 3 = 11-25%; 4 = 26-50%; 5 = >50% plot symptomatic.

[y] Percent plot symptomatic.